

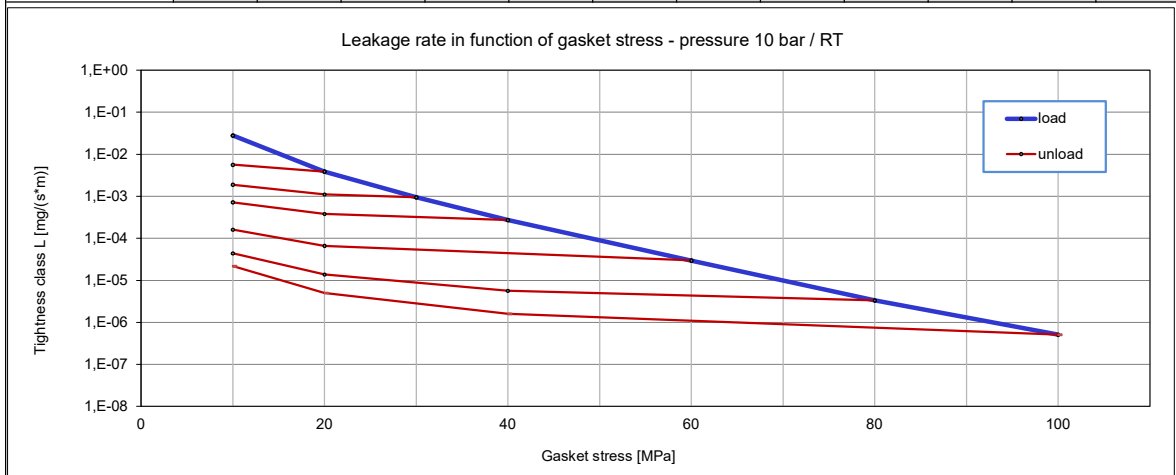
	LABORATORY OF SEALING MATERIALS 43-382 Bielsko-Biala, ul. Szyprów 17 tel. +48 33 8184133 e-mail: lbmu@spetech.com.pl www.laboratory.spetech.eu			  LB - 12402
	Company	SPETECH sp. z o.o.		
Gasket Type	SPETOBAR® BAS® 370			
Dimensions [mm]	92 x 49 x 3 (DN40 PN40)			
Calculation type EN 1591-1	a) flat gasket;	EN 1514-1	IBC	
Notes:	Rev.1 (12-02-2021)			

Factors acc. to EN 13555 to use in calculation standard EN 1591-1:2009/ :2013

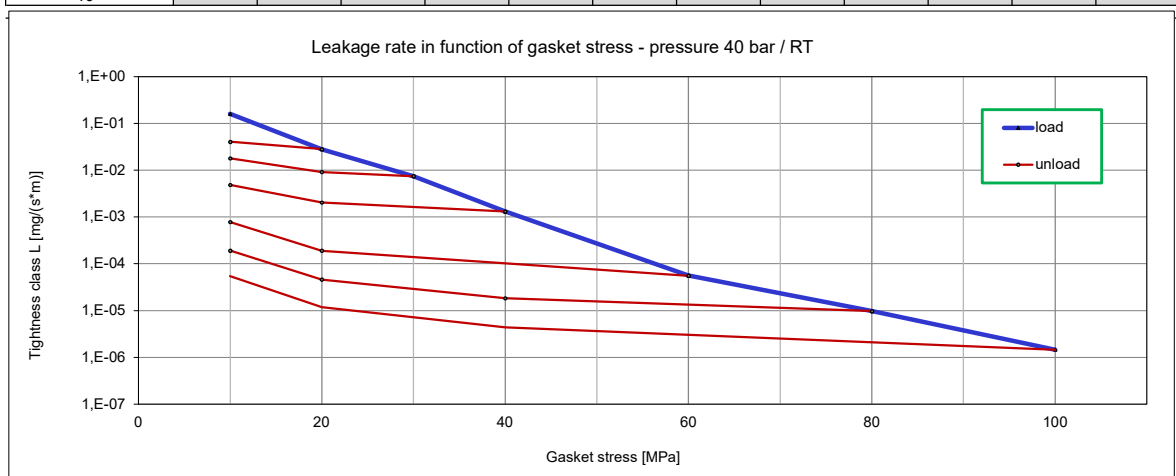
Minimum level of surface pressure required for leakage rate class L on assembly $Q_{min/L}$ and after off-loading $Q_{Smin/L}$ at room temperature (RT)

Internal pressure [bar]		10									
L [mg/(s*m)]	$Q_{min/L}$ [MPa]	$Q_{Smin/L}$ [MPa] for effective gasket stress									
		$Q_A = 20$ [MPa]	$Q_A = 30$ [MPa]	$Q_A = 40$ [MPa]	$Q_A = 60$ [MPa]	$Q_A = 80$ [MPa]	$Q_A = 100$ [MPa]				
10^{-0}	10	10	10	10	10	10	10				
10^{-1}	10	10	10	10	10	10	10				
10^{-2}	15	10	10	10	10	10	10				
10^{-3}	30		27	10	10	10	10				
10^{-4}	49				15	10	10				
10^{-5}	70					27	15				
10^{-6}	93						64				
10^{-7}											



Minimum level of surface pressure required for leakage rate class L on assembly $Q_{min/L}$ and after off-loading $Q_{Smin/L}$ at room temperature (RT)

Internal pressure [bar]		40									
L [mg/(s*m)]	$Q_{min/L}$ [MPa]	$Q_{Smin/L}$ [MPa] for effective gasket stress									
		$Q_A = 20$ [MPa]	$Q_A = 30$ [MPa]	$Q_A = 40$ [MPa]	$Q_A = 60$ [MPa]	$Q_A = 80$ [MPa]	$Q_A = 100$ [MPa]				
10^{-0}	10	10	10	10	10	10	10				
10^{-1}	13	10	10	10	10	10	10				
10^{-2}	28		19	10	10	10	10				
10^{-3}	42				10	10	10				
10^{-4}	57				42	15	10				
10^{-5}	80						24				
10^{-6}											
10^{-7}											

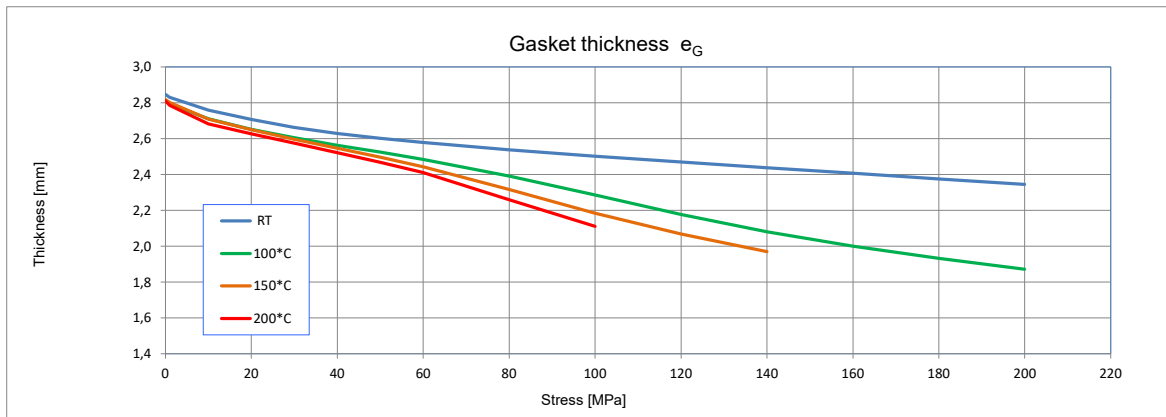


Temperature		RT						
Gasket stress	E _G	e _G	C=500 kN/mm		C=1500 kN/mm		Q _{smax}	μ _G
			P _{QR}	Δe _{Gc}	P _{QR}	Δe _{Gc}		
[MPa]	[MPa]	[mm]	[-]	[mm]	[-]	[mm]	[MPa]	[-]
0		2,847					200	0,25
1		2,830						
10	811	2,758						
20	1212	2,706						
30	1651	2,663	0,96	0,010				
40	2165	2,629						
50	2716	2,602	0,97	0,012				
60	3327	2,578						
80	4220	2,537						
100	4967	2,502	0,96	0,030				
120	5548	2,470						
140	6080	2,438						
160	6624	2,407						
180	7087	2,376						
200	7612	2,345	0,96	0,061				

Temperature		100°C						
Gasket stress	E _G	e _G	C=500 kN/mm		C=1500 kN/mm		Q _{smax}	μ _G
			P _{QR}	Δe _{Gc}	P _{QR}	Δe _{Gc}		
[MPa]	[MPa]	[mm]	[-]	[mm]	[-]	[mm]	[MPa]	[-]
0		2,814					200	0,25
1		2,793						
10	690	2,711						
20	1157	2,652						
30	1723	2,605	0,84	0,039				
40	2226	2,564						
50	2706	2,524	0,81	0,081				
60	3093	2,484						
80	3705	2,391						
100	4264	2,285	0,78	0,188				
120	4760	2,177						
140	5336	2,081						
160	5798	1,999						
180	6236	1,932						
200	6720	1,872	0,78	0,375				

Temperature		150°C						
Gasket stress	E _G	e _G	C=500 kN/mm		C=1500 kN/mm		Q _{smax}	μ _G
			P _{QR}	Δe _{Gc}	P _{QR}	Δe _{Gc}		
[MPa]	[MPa]	[mm]	[-]	[mm]	[-]	[mm]	[MPa]	[-]
0		2,819					140	0,25
1		2,802						
10	900	2,708						
20	1331	2,651						
30	1753	2,597	0,75	0,062				
40	2179	2,546						
50	2556	2,496	0,73	0,115				
60	2848	2,443						
80	3491	2,316						
100	3984	2,184	0,66	0,283				
120	4471	2,068						
140	4990	1,969	0,67	0,391				

Temperature		200°C						
Gasket stress	E _G	e _G	C=500 kN/mm		C=1500 kN/mm		Q _{smax}	μ _G
			P _{QR}	Δe _{Gc}	P _{QR}	Δe _{Gc}		
[MPa]	[MPa]	[mm]	[-]	[mm]	[-]	[mm]	[MPa]	[-]
0		2,810					100	0,25
1		2,785						
10	976	2,682						
20	1412	2,627						
30	1866	2,575	0,64	0,090				
40	2264	2,522						
50	2611	2,468	0,65	0,146				
60	2896	2,411						
80	3375	2,259						
100	3860	2,111	0,60	0,340				



Description:	E_G	Modulus of elasticity	Q_{smax}	Maximum surface pressure
	e_G	Gasket or sealing element thickness	μ_G	Static friction factor (based on EN1591-1:2014 Annex E)
	P_{QR}	Creep relaxation factor	C	Stiffness
	Δe_{Gc}	Gasket thickness change due to creep		

Factors acc. to EN 13555 to use in calculation standard EN 1591-1:2001

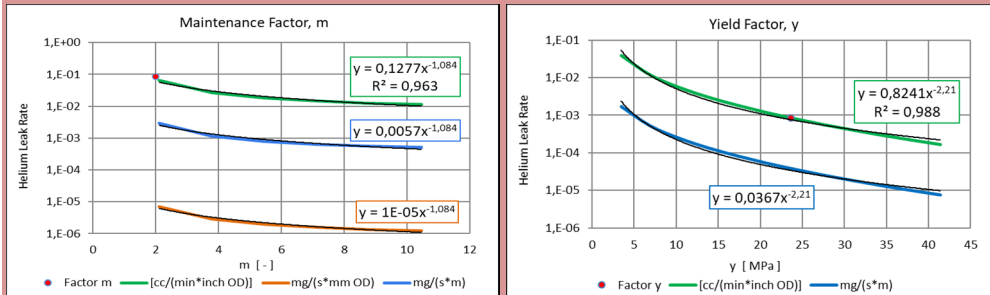
T [°C]	Q_{min} [MPa]	$Q_{max, ref}$ [MPa]	E_0 [MPa]	K_1	Q_i/P	g_c	c_1
20	35	80	500	20	1,6	-	0,05
100	-	70	500	20	1,6	-	-
200	-	60	500	20	1,6	-	-

b_{Gref} [mm]	19,5	e_{Gref} [mm]	2,8
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Factors acc. to:

EN 13445-3 : Unfired pressure vessels - Part 3: Design
 EN 13480-3:2002 Metallic industrial piping - Part 3: Design and calculation
 ASME Code s. VIII Boiler & Pressure Vessel Code

Tightness class	ASTM F3149	PVRC Tightness class		EN 13555	
		T3	T4	L0,01	L0,001
Factor m	[-]	2,0	< 2,0	< 2,0	4,5
Factor y	[MPa]	23,6		16,0	37,8
	[psi]	3420			



NOTE: Maintenance values [m] less than 2.0 are typically not used in ASME designs except for elastomeric gaskets (Classification D2000).

Gasket dimensions acc. to EN 1514-1 DN40 PN40

The given coefficient values are read from the test curves, not from the trend line.

[σ_{max} - see maximal applicable gasket stress Q_{smax} acc. EN 1591-1:2009/:2013](#)

Factors acc. to:

AD 2000-Merkblatt B7 August 2007

$k_0 k_D$ [N/mm]	k_1 [mm]	$k_0 k_0$ [N/mm]
$18,0 \cdot b_D$	$1,4 \cdot b_D$	$\cdot b_D$

[σ_{max} - see maximal applicable gasket stress Q_{smax} acc. EN 1591-1:2009/:2013](#)

Factors acc. to:

WUDT-UC-WO-O/19

σ_m [MPa]	σ_r [MPa]	b [1]		
		20°C	100°C	200°C
25,5	$4,0 \cdot p_D$	1,0	1,4	1,8

[σ_{max} - see maximal applicable gasket stress Q_{smax} acc. EN 1591-1:2009/:2013](#)

Factors acc. to:

ASTM F36-2003 Standard Test Method for Compressibility and Recovery of Gasket Materials
 Procedure J

Compressibility [%]	Recovery [%]
6	69

Factors acc. to:

ASTM F38-00 Standard Test Methods for Creep Relaxation of a Gasket Material (Method B)

Temperature [°C]	Creep Relaxation [%]
20	NDA
100	NDA
200	NDA

Factors acc. to:

EN 61340-2-3 Electrostatics - Part 2-3: Methods of test for determining the resistance and resistivity of solid planar materials used to avoid electrostatic charge accumulation

Surface resistance R_s at U=100V	[Ω]		2,66E+09
Volume resistance R_v at U=100V	[Ω]		2,25E+09
Surface resistivity ρ_s at U=100V	[Ω]		2,69E+10
Volume resistivity ρ_v at U=100V	[Ωm]		1,12E+09